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RECORDED MAGNETIC TAPE
FOR
INFORMATION INTERCHANGE
(800 CPI, NRZI)

U.S.
DEPARTMENT
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Bureau
of
Standards

CATEGORY: HARDWARE STANDARD
SUBCATEGORY: INTERCHANGE CODES
AND MEDIA

Foreword

The Federal Information Processing Standards Publication Series of the National Bureau of Standards is the official publication relating to standards adopted and promulgated under the provisions of Public Law 89-306, and under Office of Management and Budget Circular A-86. The entire series constitutes the **FEDERAL INFORMATION PROCESSING STANDARDS REGISTER**.

The series is used to announce Federal Information Processing Standards, and to provide standards information of general interest and an index of relevant standards publications and specifications. Publications that announce adoption of standards provide the necessary policy, administrative, and guidance information for effective standards implementation and use. The technical specifications of the standard are usually attached to the publication, otherwise a reference source is cited.

Comments covering Federal Information Processing Standards and Publications are welcomed, and should be addressed to the Associate Director for ADP Standards, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234. Such comments will be either considered by NBS or forwarded to the responsible activity as appropriate.

RICHARD W. ROBERTS, *Director*

Abstract

This standard specifies the recorded characteristics of 9-track, one-half inch wide magnetic computer tape, including the data format for implementing the Federal Standard Code for Information Interchange at the recording density of 800 characters per inch (CPI). It is one of a series of Federal Standards implementing the Federal Standard Code for Information Interchange (FIPS 1) on magnetic tape media. This revision to FIPS PUB 3 reflects a change in scope from the earlier version of X3.22-1967, and encompasses the recorded tape requirements only. The unrecorded tape standard will include the requirements for the physical properties of the tape and reels that were previously included in FIPS 3.

Key words: Communications; computers; computer system hardware; data processing; data processing equipment; information systems; magnetic tape recording; magnetic tapes; magnetic tape transports; standards.

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1973 June 30



ANNOUNCING THE STANDARD FOR

RECORDED MAGNETIC TAPE FOR INFORMATION INTERCHANGE (800 CPI, NPZI)

Federal Information Processing Standards Publications are issued by the National Bureau of Standards under the direction of the Office of Management and Budget (OMB) in accordance with the provisions of Public Law 89-306 and OMB Circular No. A-86.

Name of Standard. Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI).

Category of Standard. Hardware Standard, Interchange Codes and Media.

Explanation. This standard specifies the recorded characteristics of 9-track, one-half inch wide magnetic computer tape, including the data format for implementing the Federal Standard Code for Information Interchange at the recording density of 800 characters per inch (CPI). It is one of a series of Federal Standards implementing the Federal Standard Code for Information Interchange (FIPS 1) on magnetic tape media. This revision to FIPS PUB 3 reflects a change in scope from the earlier version of X3.22-1967, and encompasses the recorded tape requirements only. The unrecorded tape standard will include the requirements for the physical properties of the tape and reels that were previously included in FIPS 3.

Approving Authority. Office of Management and Budget.

Maintenance Agency. Department of Commerce, National Bureau of Standards (Institute for Computer Sciences and Technology).

Cross Index.

- a. FIPS PUB 1, Federal Standard Code for Information Interchange.
- b. FIPS PUB 25, Recorded Magnetic Tape for Information Interchange (1600 CPI, Phase Encoded).
- c. American National Standard X3.22-1973, Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI).
- d. At the time of publication of this FIPS PUB, a standard for unrecorded tape was in process. When available, it also is cross indexed.

Applicability. This standard is applicable to all 9-track magnetic tape recording and reproducing equipments employing one-half inch wide tape at recording densities of 800 characters per inch (CPI). Federal information processing systems employing such equipment, including associated programs, shall provide the capability to accept and generate recorded tapes in compliance with the requirements set forth in the standard.

Implementation Schedule. The earlier version of this standard (FIPS 3) became effective on July 1, 1969. The changes provided by this revision become effective on the date of publication. All ap-

plicable equipment ordered on or after the date of this FIPS PUB must be in conformance with this standard unless a waiver has been obtained in accordance with the procedure described below. Exceptions to this standard are made in the following cases:

- a. For equipment installed or on order prior to the date of this FIPS PUB.
- b. Where procurement actions are into the solicitation phase (i.e., Request for Proposals or Invitation for Bids have been issued) on the date of this FIPS PUB.

Waiver Procedure. Heads of agencies may waive the provisions of the implementation schedule. Proposed waivers relating to the procurement of non-conforming equipments will be coordinated in advance with the National Bureau of Standards. Letters should be addressed to the Associate Director for ADP Standards, Institute for Computer Sciences and Technology, National Bureau of Standards, Washington, D.C. 20234. They should describe the nature of the waiver and set forth the reasons therefor.

Sixty days should be allowed for review and response by the National Bureau of Standards. The waiver is not to be made until a reply from the National Bureau of Standards is received; however, the final decision for granting the waiver is a responsibility of the agency head.

Specifications. With one exception, this standard adopts the requirements set forth in the American National Standard X3.22-1973, Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI), which was developed and approved by the American National Standards Institute. The exception changes paragraph 4.4.3 of X3.22-1973 to read—"Bit Z shall be zero **or** treated as a bit of higher order than the ASCII bits". This is interpreted as:

- Bit Z shall be a zero when recording the ASCII (FIPS 1) characters.
- Bit Z can be other than zero when recording dense numeric, binary, or extended ASCII (FIPS 1) code representations.

Qualifications. It is emphasized that this standard is one of a series of standards implementing the Federal Standard Code for Information Interchange (FIPS 1) on 9-track, one-half inch wide magnetic computer tape. As such, it is not intended to be implemented to the exclusion of the 9-track, 1600 CPI standard.

Further, the block length requirements were selected to permit the interchange of recorded tapes between both large and small systems; and to insure that systems provided the capability to accept or generate tapes in compliance with the maximum block length requirements. It is not the intent of such requirements to prohibit the use of longer block lengths in internal files, nor to restrict the interchange of such tapes when prior agreements have been made among the interchange parties. Although the media standards, in general, apply to the interchange of data between installations, users are also encouraged to develop applicable internal tape files in such a manner that no related code or format conversion is required for the sole purpose of exchanging tape files among installations and agencies.

Where to Obtain Copies of the Specifications of the Standard.

a. Federal Government activities should obtain copies from established sources within each agency. When there is no established source, purchase orders should be submitted to the General Services Administration, Specifications Activity, Printed Materials Supply Division, Building 197, Washington Navy Yard Annex, Washington, D.C. 20407. Refer to Federal Information Processing Standard 3-1. (Price 70 cents a copy.)

b. Others may obtain copies from the American National Standards Institute, 1430 Broadway, New York, New York 10018. Refer to American National Standard X3.22-1973, Recorded Magnetic Tape for Information Interchange (800 CPI, NRZI). Price is \$3.75 a copy. (Discounts available on quantity orders. See ANSI catalog.)